POLYPHAGY IN LARVAE OF *HYPOCHRYSOPS MISKINI MISKINI* (WATERHOUSE) (LEPIDOPTERA: LYCAENIDAE)

P.S. VALENTINE[1] and S.J. JOHNSON[2]

[1]*James Cook University, Townsville, Qld 4811*

[2]*P.O. Box 1085, Townsville, Qld 4810*

Abstract

New larval food plants from five families are recorded for *Hypochrysops miskini miskini* (Waterhouse) and observations on links between larval polyphagy in *H. miskini* with ants and aphids are discussed.

Introduction

Common and Waterhouse (1981) list the scrambling vine *Smilax australis* R. Br. (Smilacaceae) as the only food plant for larvae of *Hypochrysops miskini miskini* (Waterhouse). Subsequently, Lane (1985) recorded *Faradaya splendida* F. Muell. (Verbenaceae) as a food plant near Kuranda, northern Queensland. The adults of *H. m. miskini* are known to fly in or near rainforests with males congregating at the tops of trees and females flying lower down close to the larval food plant (Sands 1986). A series of observations at Bluewater State Forest, approximately 40 km NW of Townsville, northern Queensland, between January 1986 and August 1987 revealed an additional six species of food plants and an interesting link between larval polyphagy, ant attendance and aphids.

Field observations

Bluewater State Forest, 19°12'S and 146°25'E, is the southernmost rainforest ridge of the Paluma Range. Our observations were made at an altitude of around 700 metres on a narrow strip of rainforest that runs north-south along the crest of a ridge with forest extending down moist gullies on either side. The western side of the crest grades rapidly from rainforest into a mixed *Casuarina spp.* and *Eucalyptus spp.* forest with an understory rich in rainforest species, including *S. australis.* It is in this habitat that the ant *Iridomyrmex gilberti Forel* thrives and along with it the butterflies *H. m. miskini, Pseudodipsas cephenes* Hewitson and *Pseone iole* Waterhouse and Lyell, the larvae of which are all attended by *I. gilberti.*

While searching for the larvae of these butterflies it became apparent that where a patch of *S. australis* showed numerous epidermal feeding scars typical of *H. m. miskini*, other adjacent plants often had evidence of a similar pattern of extensive feeding. Subsequently, *H. m. miskini* larvae

and attendant ants were found on plants not growing with *S. australis*. The variety of plants used is extensive and it is likely that more species will be discovered in time. Those positively identified as food plants for *H. m. miskini* to date are listed below. all the plants are understory species found in the rainforest wet sclerophyll ecotone.

Food plants

Maesa dependens F. Muell. (Myrsinaceae), a low spreading shrub;

Guioa acutifolia Radlk. in Sitzb. (Sapindaceae), juvenile upright shrub;

Glochidion harveyanum Domin (Euphorbiaceae), tall spreading shrub;

Rhodamyrtus trineura F. Muel. ex Benth. (Myrtaceae), low dense shrub;

Eucalyptus acmenoides Schauer (Myrtaceae), upright medium tree;

Melastoma affine D. Don (Melastomaceae), low compact shrub.

Larvae could not be located on *Eucalyptus acmenoides* during the day but a return visit at night (7.00 pm) in August 1987 revealed larvae actively feeding on the foliage.

Discussion

The discovery of additional food plants of *H. m. miskini,* especially *E. cmenoides* is of interest. It confirms the general pattern of polyphagy amongst some species closely attended by ants (see Valentine and Johnson 1988). Of interest is the lack of leguminous or other nitrogen-fixing species amongst these larval food plants, an exception to the pattern for ant-attended Lycaenidae described by Pierce (1985). An explanation for polyphagy amongst ant-attended rainforest species may be found in the distribution pattern of rainforest plants. In contrast with other vegetation communities "common species are rare and rare species are common" (Forsyth and Miyata 1984). Once obligatory ant-attendance occurs in this situation a narrow choice of plants may be too restrictive and cancel the advantage of ant-attendance. This suggests that where obligate myrmecophily occurs in tropical rainforests it will be accompanied by larval polyphagy and that rainforest butterflies confined to a single larval food plant species will not be ant-attended. Known life histories of rainforest Lycaenidae in northern Queensland agree closely with this pattern.

While we were seeking larvae at Bluewater State Forest we also noted that clusters of larvae feeding on different plant species frequently occurred in close proximity to concentrations of aphids on the stalks of *Alpinia caerulea* (Zingiberaceae), a common ginger. These plants are common throughout this forest and are frequently attacked by aphids which are attended by numerous *I. gilberti*. This association of aphids, ants and

butterflies may be more than coincidental. Sands (1986) points out the attraction of gravid female *H. ignitus ignitus* (Leach) to colonies of Membracidae attended by ants of the *Iridomyrmex nitidus* Mayr group. Kitching (1987) also describes the use of membracids as oviposition clues in a lycaenid butterfly in Indonesia (*Allotinus major* Felder and Felder). We have observed an association between eggs of *Pseudodipsas* spp. and concentrations of membracids on the stems of the shrub *Guioa acutifolia* at Bluewater. There is clearly an opportunity to further explore this link between ants, aphids and butterfly oviposition. While the relationship between polyphagy, ant attendance and tropical rainforests also deserves further study.

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